

# Industrial Standardization



November

How Safe Are "Safety" Gloves?  
(Article on Page 221)

1944

# American Standards Association

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# Industrial Standardization

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RUTH E. MASON, Editor

*Our Front Cover:* Photo by Richard B. Hoit, from Cushing.

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**The Pictures—**Front Cover, *Steel worker wearing leather gloves cuts sheet of steel*, Ewing Galloway; Frontispiece, U. S. Signal Corps; page 222, Ewing Galloway; 232, U. S. Steel Corp.; 234, Associated Press Service; 236, Spencer Lens Corp.



*Reg. in U.S. Pat. Off.*

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# How Safe Are "Safety" Gloves?

## New American War Standards Outline Minimum Requirements for Adequate Hand Protection

by Stewart J. Owen, Jr.<sup>1</sup>

*Chairman, Subcommittee on  
Hand Protection of War Committee L18*

THE mounting toll of industrial accidents during the past few years, which the National Safety Council reports has put the war in second place as a killer, has focused the attention of both government and industry on measures for preventing injuries to industrial workers. In 1943, 18,000 workers were killed in accidents while on the job, and the appalling total of 1,850,000 were injured.

This loss is especially grave not only because of the human suffering it causes, but also during the past few years because of the inroads it has made in the manpower available for war production. Accidents have been so serious in view of our intensive program of production to win the war that both the Army and Navy have set up departments whose sole purpose is to find means of educating management and workers in the best methods to follow for maximum safety.

Unfortunately, however, both services have found that in many cases the information, and the equipment, which would make it possible for them to carry out their assignment, is lacking.

### Protective Clothing an Urgent Problem

One of the most urgent of these safety problems, they found, was that of protective clothing—gloves, aprons, overalls, helmets, leggings, and shoes—made of materials and in designs which would satisfactorily protect a worker from sharp edges of glass or metal, from splatters of molten metal, from sparks, from rough and abrasive materials, from acids, and from burns when handling red-hot metals or when working closely over intense heat. The materials needed for garments that would adequately protect industrial workers from such hazards are also needed for the protection of the men in the armed forces. Leather and asbestos particularly have been in unusually heavy demand. These materials are used for heavy work in shipbuilding, in steel mills, in welding, glass making, and similar operations where excessive heat, flying sparks, splatters of metal, or abrasive materials make ordinary material ineffective. Safety of the worker in these operations depends not only on whether he actually wears a "protective" garment but also upon whether the garment itself is so constructed that it actually protects. In many cases, safety engineers and government inspectors have found workers who have been wearing "safety" clothing still reporting cuts or burns. All too frequently these "safety" garments were found to be made of low grade, undependable leather

or asbestos which with a small amount of wear had become no more "safe" than any ordinary work garment.

Very little has been known, however, or could be agreed upon by the various groups, concerning the requisites of a safe "safety" garment.

Scarcity of material and scarcity of manpower together brought the problem to the attention of the War Production Board. As a result, the WPB asked the American Standards Association to organize war committees to develop standard specifications for safety clothing which would adequately protect workers and at the same time use the scarce materials to the best advantage. Such standards, it was specified, should require material which would wear well under the treatment to which it would be subjected, but should not require a higher grade of material than was actually needed for the job. They should also provide dimensions and design requirements which would give the wearer a satisfactory fit and at the same time provide the safety features needed.

As a result of the WPB request, the ASA organized the War Committee on Protective Occupational (Safety) Clothing, with a membership of manufacturers, industrial safety engineers, government experts, and representatives of the Army and Navy. This committee has already issued six standards on leather aprons, sleeves and cape sleeves, leggings, coats, and overalls. Now, it has completed a series of standards for leather and asbestos gloves and mittens. Welders' leather gauntlet gloves, steel-stapled leather gloves, asbestos gloves, leather-reinforced asbestos gloves, asbestos mittens, and leather-reinforced asbestos mittens—all in sizes for both men and women—have been provided in these standards. All have been carefully worked out as to design, dimensions, kind and strength of materials, and tests by which the materials can be checked. They define the minimum requirements which safety garments must meet in order to protect the worker adequately.

### Different Grades of Asbestos Are Tested

The asbestos gloves and mittens offered the most serious problems, since very little information existed about the wearing quality or heat resistance of the various grades of asbestos. The extreme scarcity of asbestos made it particularly important that careful consideration be given to the grade and weight of asbestos recommended. Men and women handling hot implements, exposed to splatters of molten metal, or to radiant heat, could suffer severe, even dangerous, burns

<sup>1</sup> Safety Engineer, National Bureau of Standards.

if the material in their asbestos gloves should happen to scorch through. Because so little information was available, and because there was serious doubt as to the effectiveness of some of the lower grades of asbestos, the War Production Board asked the National Bureau of Standards to test, and to report on the results of tests, on the different grades of asbestos. As a result of these findings, the committee has accepted the Underwriters' Grade<sup>2</sup> as giving good, although not the best, protection, and at the same time using only a necessary quantity of asbestos. A test for determining the asbestos content of the gloves and mittens is included in the standard. In addition, tests for the weight of the asbestos and the breaking strength have been included.

In many jobs in which asbestos is needed to protect the hands of the worker from excessive heat, other hazards are also present. Sharp metal or glass, or abrasive materials, such as bricks, may cut through asbestos gloves, or wear through the fabric, since asbestos is not strong nor is it resistant to abrasion. As a protection against this type of hazard, a standard for asbestos gloves, and for mittens, reinforced with leather, has been provided. Both the gloves and the mittens are provided in two sizes, men's and women's, each size to be made in 10-inch, 13-inch, and 22-inch lengths.

The new standards for leather gloves provide plain welders' leather gloves, and also steel-stapled leather gloves. The welders' leather gauntlet gloves, as the name implies, provide protection against sparks, molten metal, infrared and ultraviolet rays, and against direct contact with hot material.

The work that women are doing in war production is recognized in all these standards in the fact that a glove sized especially for women is provided in all cases. The leather gloves come in three patterns for

**Asbestos mittens protect hands when heated impellers, to fit on splined shaft of airplane supercharger, are tested.**



## War Standards Available

The six War Standards for leather and asbestos gloves and mittens, just completed, offer the first national standards for hand protection. They are:

Welders' Leather Gauntlet Gloves, L18.7-1944  
Protective Leather Gloves, Steel-Stapled, L18.8-1944  
Asbestos Gloves, L18.9-1944  
Asbestos Gloves, Leather Reinforced, L18.10-1944  
Asbestos Mittens, L18.11-1944  
Asbestos Mittens, Leather Reinforced, L18.12-1944

All six standards are published in one document, available from the American Standards Association at 30 cents per copy.

both men and women—the Clute pattern, the Gump pattern, and the Montpelier pattern. The thickness of the leather and the method of measuring the thickness are specified, as well as requirements for grease content, chromic oxide, acidity, heat resistance, and shrinkage. Methods for determining whether the leather meets these requirements are included.

In many jobs plain leather gloves are inadequate to protect a worker against cuts, bruises, abrasion and puncture wounds which may result from handling sharp or abrasive materials. For jobs in which sharp metal or glass or abrasive materials such as bricks are handled, specifications for steel-stapled leather gloves have been developed. In these gloves, steel staples are applied to the palm and fingers as a protection against cutting or wearing of the leather. In addition to requirements for construction, design, and quality of leather similar to the requirements for welders' leather gloves, the specifications include requirements for the placing of the steel staple stitching. Test requirements and requirements for minimum thickness, width, and length are included.

In completing these first six standards, for hand protection and the earlier leather garments, the War Committee has made a good beginning toward providing the first national standards for asbestos and leather garments to protect industrial workers. Additional standards are now nearing completion. These include asbestos aprons, leggings, cape-sleeves, spats, mittens and coats; as well as aprons, leggings, coats, pants, coveralls, and spats of flame-resistant fabric. Work is also going forward on aprons of chemical-resistant fabric. A new subgroup will be appointed soon to study synthetic rubber as a basis for work on gloves and mittens for protection of workers' hands when working with or using chemicals.

Although these standards may not be used as originally intended—as the basis of War Production Board orders limiting production to garments made according to American War Standard specifications—they do offer the first authoritative, nationally recognized standards for this type of garment. It is expected that they will be used by safety engineers in industry, as well as by the Navy, the Ordnance Department, and the Maritime Commission, in purchasing protective gloves and

<sup>2</sup> As defined in Tentative Specifications for Woven Asbestos Cloth, ASTM D 677-42T, of the American Society for Testing Materials.

mitten for the safety of the workers under their jurisdiction.

The committee has no illusions as to these standards being the final work on the safe design and construction of protective garments. On the other hand, it expects that after they have been in use for a long enough period of time they will be revised in light of the experience gained. Comments and suggestions will be appreciated.

## Navy Department Adopts War Clothing Standards

The American War Standard specifications for women's industrial clothing have been adopted as the standard for industrial clothing used in the naval shore establishments. This policy is laid down in Safety Engineering Order No. 2-44, signed by the head of the Safety Branch, Division of Shore Establishments and Civilian Personnel, of the Navy Department.

The standards covered by the order are:

Bungalow Aprons and Wrap-around and Coat-Style Dresses, L17.1-1944

Slacks, Dungarees, Overalls, and Coveralls, L17.2-1944

Jackets, Shirts, and Aprons, L17.3-1944

Regular and Princess Model Coat-Style Dresses, L17.4-1944

The order exempts industrial clothing already in service, and substitutes a paragraph on shrinkage treatment for the paragraph in the American War Standard Specifications for Bungalow Aprons and Wrap-around and Coat-Style Dresses. The substitute paragraph reads:

"All materials to be used in the Women's Industrial Clothing should be fully shrunk with the residual shrinkage in the warp and filling not to exceed 1 percent. This is standard practice in Navy procurement and assures a proper fit after laundering."

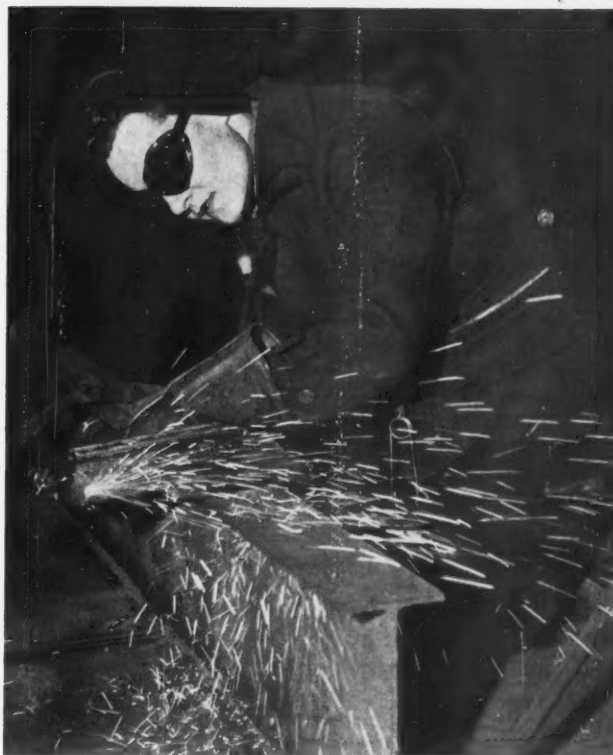
Only those suppliers of women's industrial clothing whose products conform to these standards will be recommended by the naval shore establishments as acceptable sources of supply.

## China and Brazil Join United Nations Standards Committee

China and Brazil have now accepted invitations to join the United Nations Standards Coordinating Committee. As announced in INDUSTRIAL STANDARDIZATION, October (page 209), Australia, Canada, Great Britain, New Zealand, and the United States, and South Africa, have already joined the Committee. Russia and Mexico have also been invited and are expected to join.

The New York office of the United Nations Standards Coordinating Committee is now operating at 70 East Forty-fifth Street, with Herbert J. Wollner in charge.

Howard Coonley, chairman of the board of the Walworth Company, who is now on his way to China to act as assistant to Donald Nelson in reorganizing Chinese industry, is official representative of the American Standards Association on the Committee. P. G. Agnew, secretary of the ASA, is Mr. Coonley's alternate, and is member of the Executive Committee of the UNSCC.



Girl shipyard worker wears protective leather gloves to burn rough edges from steel plate for ship's hull

## Subcommittee Developed Standards

The Subcommittee on Hand Protection which developed the six new War Standards on protective gloves and mittens is now working on three additional standards—for leather mittens, leather one-finger mittens, and asbestos one-finger mittens. A subgroup to study the possibility of developing rubber gloves for protection against chemicals is being organized.

Members of this Subcommittee on Hand Protection are:

Stewart J. Owen, Jr., National Bureau of Standards, *Chairman*

J. B. Allin, Clothing Branch, War Production Board

Captain John P. Breen, Intelligence and Security Division,

Office, Chief of Transportation, U.S. War Department

Mark Bulot, Safety, Inc.

Milton Hammer, Safety and Technical Equipment Division, War Production Board (*alternate*)

Major James K. Healy, Field Inspector Area IV

S. S. Hall, Surety Rubber Company

H. W. Hoover, Engineering Division, Maryland Casualty

Company

Edward B. Landry, Division of Shore Establishments and

Civilian Personnel

R. W. Webster, Bureau of Ships, Navy Department

I. W. Millard, Industrial Gloves Company

George Schauweker, Safety Division, American Optical

Company

W. R. Shields, Calco Chemical Division, American Cyana-

mid Company

W. F. Weber, Western Electric Company, Inc.

E. L. Wheeler, F. H. Wheeler Manufacturing Company

# Graphical Symbols Brought Up-to-Date Telegraph, Telephone, Radio

by W. L. Heard<sup>1</sup>

*Chairman of Subgroup 4 on Communication Symbols,  
ASA Sectional Committee on Graphical Symbols for  
Use on Drawings*

**T**HE lift which the war has given to the development of radio and communications systems has made it essential that our standards for the electrical symbols used on drawings be revised to bring them up-to-date with changes this progress has made necessary.

The war has brought together many fields of effort which before had been more or less self-contained. For example, the power field deals directly with the transmission of electrical energy; and the field generally known as communication has to do with the transmission of electrical signals or the transmission of signals which can be used to reproduce human speech. These two fields have now to a large degree lost their previous entities and boundaries. Although they have been in existence for years they had not previously directly overlapped or interfered with each other to the extent that industry had felt the need of coordinating the language used on the drawings produced in each field. With the advent of this war, however, conflicts and overlapping began to develop. This was particularly true in such industries as aircraft where the power field produces part of the electrical equipment, and the communication field another part, and the whole is then turned over to maintenance men who must be trained quickly and with as little lost effort as possible.

As a result of the problems brought about by such overlapping, the American War Standard Coordination of Graphical Electrical Symbols<sup>2</sup> was issued early this year. However, this standard is of a temporary nature and is to be used only until the regular American Standards (American Standard Symbols for Telephone, Telegraph, and Radio Use, Z32.5-1942; American Standard Graphical Symbols for Power, Control, and Measurement, Z32.3-1943, etc.) can be brought into line with this emergency war standard.

The first of these standards to be revised in line with the war standard is the American Standard Symbols for Telephone, Telegraph, and Radio Use. In the new edition just completed, the symbols which had differed from those in the War Standard have been changed to agree with them. In addition, other symbols have been changed to agree with newer drafting practice and a number of additional symbols suggested by the Armed Forces have been included. This revised standard now supersedes, for the communication and electronic industries, the American War Standard Coordination of Graphical Symbols, Z32.11-1944. It is understood that it is already being placed in use by the Signal Corps and will be used by the Ground Signal Publications

Agency in the preparation of all future drawings and instruction books for Signal Corps ground signal equipment.

In addition to the work now completed on symbols for communication work, it is intended to issue other graphical symbols for use in electrical engineering, as outlined below.

A proposed standard which will provide basic graphical symbols for all electric apparatus (Z32.12) is already in tentative form, and when finally issued will be used as a basis for separate standards for individual industries where it is believed a separate standard will be useful. The American Standard Graphical Symbols for Power, Control, and Measurement, Z32.3-1943, previously issued, is now being revised to bring it up-to-date to agree with the American War Standard Coordination of Electrical Graphical Symbols, Z32.11-1944. An American Standard Graphical Electrical Symbols for Architectural Plans, Z32.9-1943, is also

## Committee of Experts Prepared Revised Standard

Subgroup 4 on Graphical Symbols for Telephone, Telegraph, and Radio Use, which prepared the revised edition of the American Standard Graphical Symbols Z32.5-1944, and brought the new edition into line with the American War Standard Coordination of Electrical Graphical Symbols, has the following membership:

W. L. Heard, Bell Telephone Laboratories, Inc., *Chairman*  
E. S. Barrie, Western Electric Company, Inc.  
W. A. Bischoff, Bell Telephone Group  
J. T. Brothers, Philco Radio and Television Corporation  
Bureau of Ships, U. S. Navy Department  
R. S. Burnap, American Institute of Electrical Engineers  
F. Cowan, National Electrical Manufacturers Association  
J. Irish, Bell Telephone Group  
O. T. Laube, American Telephone and Telegraph Company  
H. W. Morehouse, Western Union Telegraph Company  
Signal Corps Standards Agency, U. S. Army Signal Corps  
A. B. Smith, United States Independent Telephone Association  
H. M. Turner, Institute of Radio Engineers  
Dr. L. P. Wheeler, Federal Communications Commission Working Committee, Aeronautical Board

Copies of the American Standard Graphical Symbols for Telephone, Telegraph, and Radio Use are available from the ASA at 30 cents each.



<sup>1</sup> Bell Telephone Laboratories, Inc., New York.

<sup>2</sup> "Coordination of Electrical Graphical Symbols," by W. L. Heard, INDUSTRIAL STANDARDIZATION, May, 1944, page 89.

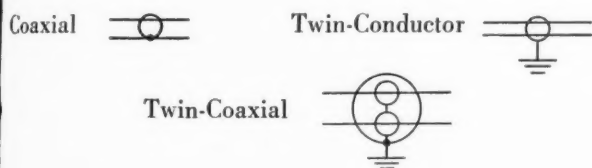
available. The American Standard Graphical Symbols for Electronic Devices, Z32.10-1944, was completed some little time ago and is in general use for electron tube symbols. It is intended that other fields will be covered with a specific standard where it is felt that such a standard is desirable. At the present time there is considerable discussion as to the desirability of formulating a standard for the exclusive use of the aviation field.

### Coordination of Telephone, Telegraph, and Radio Symbols

The new edition of the American Standard Graphical Symbols for Telephone, Telegraph, and Radio Use, Z32.5-1944, which now incorporates the symbols suggested in the American War Standard Coordination of Graphical Symbols, includes the following changes. For example, in the old communication standard, the


capacitor was shown thus  while in the new standard it will be shown with a bar and an arc, thus . Examples of the additional symbols included to cover needs which have arisen during the war are those for radio-frequency cables.


#### Radio-Frequency Cable



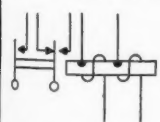
#### Basis of Design and Use of Communication Symbols

This American Standard covers the graphical symbols for devices used only in telephone, telegraph, and radio work. The symbols are made up of component parts which are given first in the standard. From these component parts are built up typical applications showing the use of the component symbols in various classes of devices such as relays, keys, transformers, etc. To formulate a symbol for a specific device, the components as listed are selected from those shown or are made by the creation of, or the assembly of, com-

bined symbols. For instance,  depicts a make

break, make relay spring combination, while  shows a relay core with certain winding combinations. From these specific units a relay combination

can be assembled. It is not intended,



of course, to depict all combinations that could be assembled inasmuch as this would mean an endless variety of possibilities. It is believed, however, that with the examples given, the specific arrangements which are necessary can be formulated. These symbols for electric devices are intended primarily to indicate

#### 2 BASIC SYMBOLS AND ADAPTATIONS

##### 2.34 INDUCTOR (Also See Relay)

2.341 Fixed



Note: Whenever the above symbol has been used in this standard, it is also acceptable to use the following symbol:



2.342 Adaptations  
AIR CORE



VARIABLE OR ADJUSTABLE



SHIELDED



MAGNETIC CORE



TRANSFORMER



TRANSFORMER  
(Variable or Adjustable)



TRANSFORMER  
(Magnetic Core)



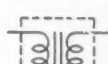
TRANSFORMER  
(Variable Core)



TRANSFORMER  
(Variable Core in One Winding Only)



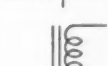
TRANSFORMER  
(Magnetic Core and Shielding)



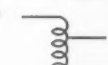
TRANSFORMER  
(Magnetic Core and Shielding on One Winding Only)



TRANSFORMER  
(Magnetic Core Multi-Winding)



AUTO TRANSFORMER



Typical page from the revised American Standard

electrical functions only, although their respective physical pattern may be given in some cases where the relation of one part of the symbol to another is necessary to give the distinct operating feature which it is desired to depict.

#### Standard Symbol Sizes

It has not been intended to standardize sizes of symbols or width of lines but, as depicted in the standards, these have been shown for average drawing use and when reduced two to one result in sizes which seem most desirable for publication purposes. The size and width of lines, however, may be altered as required for specific use, although it is believed that the sizes shown in the standard are, in general, those which will best meet general usage. It is not intended that wires need be brought into the symbol in any particular position as these may be varied to fit the particular circuit pattern.

#### How the Standardization Was Accomplished

The work on the revision of the American Standard Graphical Symbols for Telephone, Telegraph, and Radio Use, Z32.5-1944, was accomplished under the organization of ASA Committee Z32 which covers Graphical Symbols and Abbreviations for Use on Drawings. This committee works under the sponsorship of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers. The actual work of the revision was under the direction of a subcommittee known as Subgroup No. 4, Communication Symbols.

# Some Problems in Calculating Industrial Injury Rates<sup>1</sup>

by Henry G. Lamb

*Safety Engineer, American Standards Association*

**P**RACTICALLY all industrial plants that are keeping accident records today are using the American Standard method of computing frequency and severity rates. This standard method is included in Safe Practice Pamphlet No. 21 of the National Safety Council, and published separately as American Standard Method of Compiling Industrial Injury Rates, Z16.1-1937, by the American Standards Association.

The wide adoption and use of these frequency and severity rates has led to certain questions concerning problems which have confronted the users. Some of the suggested solutions of these problems appear to be quite widely accepted, while other suggestions have led to some rather heated controversies. Let us first consider the suggested changes that have met with wide acceptance.

There is a rule in the present standard which was intended to provide for the late reporting of accidents or for computing the severity of cases which were still losing time when the rates were computed. This rule, as it was written, suggested that where rates, once closed, could *not* be revised, the late reported injury or change in lost days should be shown in the period when it first became known. This was intended *only* for those cases where it was impossible or impractical to revise the rates for the period when the injury actually occurred. Through years of use it has come to the point where this permissible exception has been interpreted by some engineers to be the governing rule, and such cases as this have been cited:

Department "X" has been operating for 14 months without a lost-time accident. Two years ago an employee injured his knee but lost no time. This case was reported at once but was not entered in the record because there was no lost time. Now this employee has water on the knee and the doctor says it was due to that old injury. He will lose about three weeks time. Must this department now spoil its 14-month record by recording, this year, an injury which actually happened two years ago?

The ASA Sectional Committee on Methods of Recording and Compiling Accident Statistics<sup>2</sup> has prepared a proposed revision of this rule. The revision was pub-

<sup>1</sup> This paper, originally entitled "Recent Developments in Industrial Accident Reporting Methods and Injury Rate Calculations," was presented at the Thirty-third National Congress and Exposition of the National Safety Council, Chicago, October 4, 1944.

<sup>2</sup> This committee works under the sponsorship of the International Association of Industrial Accident Boards and Commissions, the National Council on Compensation Insurance and the National Safety Council in accordance with the procedure of the American Standards Association.

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## Use of American Standard Method of Compiling Industrial Injury Rates raises questions as to how certain causes of lost time should be calculated

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lished last January for a year's trial and criticism. There have been a few comments concerning the length of the waiting period for closing the monthly report, but the principle of this revision has met with wide approval. The suggested change reads as follows:

"*R11 Standard Comparison Rates.* A uniform method of incorporating delayed time charges and unreported cases into the rates for a given period is necessary if comparisons are to be valid. Therefore, standard comparison rates shall be compiled in accordance with the following rules:

"(a) Annual frequency rates shall be based on all injuries occurring within the year and reported within one month after the close of the year.

"Monthly frequency rates shall be based on all injuries occurring within the month and reported within 20 days after the close of the month.

"(b) Time charges for reported cases in which disability continues beyond the closing dates stated in (a) above shall be estimated on the basis of medical opinion as to probable ultimate disability.

"(c) Cases first reported, and time charges determined after closing dates stated in (a) above, shall not be included in the standard comparison rates for that period, or for any similar subsequent period. However, they shall be included, and shall replace estimates, in rates for longer periods of which that period is a part. The following are some examples:

"*Example 1.* An injury which occurred in March 1943, and was reported April 25, 1943, would not be included in the standard comparison rate for March, but would be included in the annual rate. Similarly, an injury which occurred in 1943 but was not reported until February 1944 would not be included in the 1943 annual rate, but would be included in subsequent two- or three-year rates of which 1943 is a part.

"*Example 2.* An employee suffered amputation of the lower arm on June 22, 1943. On July 20, severity rates were calculated for June with a time charge of 3,600 days. Later in the year infection developed in the upper arm, so that surgical amputation at the shoulder was necessary. The severity rate for June will remain unchanged, but, in calculating cumulative or annual rates for 1943, the time charge for this injury shall be 4,500 days.

"(d) Revisions of standard comparison rates, if made, should include all cases occurring within the period and reported up to the date of revision, and time charges should be made according to disability as then determined or estimated. It is recommended that revision of annual rates be made yearly."

The sectional committee will probably act on this wording at the time of the next revision of this standard.

### Inoculation Disability Problem Nearing Solution

A misunderstanding about another group of injuries now appears to be pretty well straightened out. Employees for certain jobs are required to take inoculations for typhoid fever and certain other "shots" for various diseases before they are allowed to go to work. In a percentage of these cases a temporary disability develops from the inoculations and the employees are unable to work for perhaps as much as one or two weeks. The Compensation Authority having jurisdiction has ruled that these cases are compensable. Now Rule R14 says in effect that when in doubt as to counting any specific case the Compensation Ruling shall be used. This rule would, therefore, infer that such cases should be included as lost-time injuries. It is obvious that these cases are not the result of an accident nor of an occupational disease in the usual sense of the word. At a meeting of the sectional committee on March 30, 1939, it was voted that lost-time injuries as a result of immunization as a prerequisite of employment should not be included in the standard rates. This decision was reaffirmed by a small subcommittee at a meeting on March 25, 1944. Probably at the next revision, some explanation or note will be added to clarify this point.

Since this standard was approved in 1937, there has been a great increase in the use of frequency and severity rates, and there are several rules and statements which now deserve expansion or clarification in order that all parties using the standard will have the same understanding and the same interpretation as was the intent of the committee when it composed the wording. These cases, however, do not involve any particular disagreement or controversy.

Now let us turn to some of the subjects upon which there has been some controversy, and upon which there has not yet been any definite agreement.

### Definition of "Temporary Total Disability" Most Controversial

Those familiar with the standard will recall that six classifications of industrial injuries have been recognized in the present standard. They are: death, permanent total disability, permanent partial disability, temporary total disability, temporary partial disability, and first aid cases. Standard frequency and severity rates are based upon the first four of these classifications. At the present time probably the most controversial point on the subject of rates is the definition of temporary total disability. The present standard defines this as the term applied to any injury, other than a permanent disability, which in the opinion of the doctor makes it impossible for the injured employee to return to work on the calendar day following the day on which the injury occurred, or on some later day. This definition is further expanded by an interpretation which says that no matter what time of day the employee is injured, if no permanent disability exists and if at the beginning of the next calendar day he is unable, in the opinion of the doctor, to perform his ordinary duties or the normal duties of some other regularly established job, the injury should be called a temporary total disability. On the other hand, if he is able to perform the normal duties of some other regularly

established job, the injury should be counted as a temporary *partial* disability.

It might be possible to devote the entire time of this paper to the controversies centering around this one definition. Some engineers interpret the definition of temporary total disability so that if the injured employee returns at any time during the following day the injury is not counted. Other engineers interpret the part of this rule which says "at the beginning of the next calendar day" as meaning 12:01 A.M. This does not make any particular difference when the employee is on the day shift, but when the employee happens to be on a shift from 4:00 P.M. to midnight, a strict interpretation of this ruling would mean that the employee would have to be able to go back to work within one minute after his regular shift had ended.

Another new point in question on this definition is the question of the loss of part of a day. In other words, if an injured employee is unable to work for only a part of a day subsequent to the day of the injury, should this, or should this not, make the injury a temporary total disability?

Another conflict is the matter of returning to work. It will be noted from the rule that if the employee is able to return to the normal duties of any regularly established job, the case is not counted as a total disability. This works out very well when the injured employee is able to do all of the regular functions of some normal job in the plant where an employee is really needed to do this work. The employee is put to work and there is no lost time. The problem arises, however, when another injured employee is able to do this same kind of work but, due to slack times, no employee is needed for that work on the day following the injury and, therefore, there is no actual opportunity

### Standards On Accident Statistics Available from ASA

The American Standard Method of Compiling Industrial Injury Rates, Z16.1-1937, was developed by a sectional committee sponsored by the National Safety Council, the National Council on Compensation Insurance, and the International Association of Industrial Accident Boards and Commissions. The committee works under the procedure of the American Standards Association.

Another standard on accident statistics, developed by the same committee, gives information about compiling industrial accident causes. This standard, Z16.2-1941, is in two parts—Part 1, Selection of Accident Factors, and Part 2, Detailed Classification of Accident Factors.

The American Standard Method of Compiling Industrial Injury Rates, Z16.1-1937, is available from the American Standards Association at 20 cents per copy.

The American Standard Method of Compiling Industrial Accident Causes, Z16.2-1941, is available at \$1.00.

for this employee to work. According to the wording of the rule, the only requirement which must be satisfied is that in the opinion of the doctor the employee is able to return to such a job. We do, however, know of many conscientious safety engineers who will not classify an injury as a temporary partial disability unless the injured employee actually does work at the substitute job.

There is another problem of employment which has not been covered by the present rule when an employee is injured so that he cannot perform all of the functions of his own regular job but where his knowledge of this work, or some other factor, makes it practical for him to return to his regular job, but with greatly reduced efficiency.

#### Arbitrary Line May Have to Be Drawn

In talking over this particular rule with members of the sectional committee who helped draft the original document it appeared that they had come to the conclusion that somewhere an arbitrary line would have to be drawn between accidents which are counted and those which are not counted in the record. They arrived at the following conclusion: If an employee's injuries were so slight that when it came time for him to go to work on the following day he was able to resume his regular job and his normal activities, then such an accident should not be counted; but if at the beginning of the next day or shift this employee was still suffering from the results of his injury, so that it was not advisable for him to go back to work, then such an accident should be considered as a lost-time injury.

Within the past year several safety engineers have sent in suggestions concerning this definition of lost-time injury. Some engineers have suggested that the definition be changed so that the employee could be out for a total of exactly 24 hours after the time of the injury before he had to return to work. Others have suggested that this definition should be changed so as to permit a loss of one complete shift of work after the shift on which the employee was injured. To all intents and purposes this latter suggestion would allow one additional day of lost time before a case is counted.

#### Definition of Lost Time Important for Comparable Rates

This matter of one day lost is of considerable importance in keeping comparable rates, when it is considered that one large public utility has reported that 20 percent of all its reported accidents were cases which lost only one day and that 50 percent of its cases were four days or less of lost time.

Another suggestion has been made with regard to observation periods after an employee has received a head injury or an abdominal injury. There are some cases where the doctor places such an employee under observation for 24 to 48 hours in order to make sure that there have been no brain injuries or internal injuries in the body. The employee may be out for 48 hours and then the doctor may tell him that actually there was nothing the matter with him but that he had kept him out for that length of time just for observation.

In such a case some engineers have found it extremely difficult to explain to the employees in the injured man's plant or department that such a circum-

stance should count against their record, or particularly that such a case should break a long record in which there had been no lost-time accident. This problem also arises when an employee has been exposed to an injurious gas, such as chlorine or one of the compounds of nitrogen, and particularly where disability may be delayed for 24 or 48 hours after the exposure.

#### Preventive Medicine and Lost Time

There is another group of injuries upon which there is at present some controversy. These are the cases where an employee receives a puncture wound or some other injury which in itself is not disabling but where the doctor, in order to prevent lockjaw or some other infection, inoculates the injured employee with tetanus antitoxin or some other preventive medicine. The injured employee then returns to work, but at some time, perhaps even three or four days later, he gets a reaction to the antitoxin and is laid up one or two weeks as a result of the reaction. In these cases a definite injury has been received, but one which, barring complications or infections, might not have caused lost time had it not been for the antitoxin treatment. Of course it should also be remembered that if this same case had not been treated by antitoxins, the result might have been fatal. There is a real question in the minds of some engineers as to whether or not such injuries should be counted in the record.

Another injury upon which there has been considerable controversy is our old enemy, the hernia. Part of this controversy has been brought about because of the wide discrepancies between compensation rulings on this subject in the various states. Some states make a very strict interpretation whereby an employee is only compensated for hernia if the injury is so sudden and so severe that the employee has to stop work immediately because of the pain involved. He is also required to report the hernia to his employer within 24 hours of the time of injury. Other states make a very liberal interpretation whereby almost any hernia which occurs during the time of employment becomes compensable.

The discrepancies between the rulings of workmen's compensation commissions undoubtedly have led to frequency rates by organizations in different states which are not truly comparable from an accident-prevention point of view. This problem is particularly important in large national organizations which compare the accident-prevention situation in their various plants by means of the frequency and severity rates. This has been such an important point that some large organizations have attempted to set up their own body of interpretations and to apply these to all of their plants indiscriminately and without reference to the rulings of the workmen's compensation commissions having jurisdiction.

#### Injury Rate Difficulties Are of Three Types

It might appear from the numerous instances just stated that there is a great deal of confusion concerning injury rates, but it may well be that most of these cases can be roughly allocated to one or another of three types of fundamental conflicts.

The first conflict is between a standard which would be a true indication of accident-prevention progress, as

compared to a standard which would be a watertight set of rules upon which to run a contest. On the one hand the rules are concerned with including any and all accidents which concern the experience of the company and should be as closely as possible a true indication of the frequency and severity of all industrial injuries whether they result from accident or occupational diseases. Compared to that, contest rules must first of all be very clear and definite, and for the purposes of a contest it might be entirely practical to leave out certain classes of injuries which are not particularly important for this purpose.

For instance, many contests in the past have specifically excluded all hernia cases.

The second fundamental conflict is brought about because of the wide variation of workmen's compensation rules among the 48 states. Undoubtedly, it is much simpler to write a standard saying that the workmen's compensation commissions having jurisdiction shall determine the ruling with regard to any questionable case rather than for any group or committee to try to set up a complete list of interpretations to be used uniformly in all states for injury rate purposes.

This brings up the third problem which arises out of the differences between large plants or organizations as compared to small companies which may only have 100 or 200 employees. The large company is able to provide experienced safety engineers. The large companies may also have plants in several states and are, therefore, more interested in a uniform system which will not vary with the workmen's compensation rulings in the individual states. As compared to this, a small company must, because of its size, train someone in its organization to handle safety activities, probably in combination with many other duties. They are interested in simple rules which can be easily applied, and in many cases they have to rely upon the Workmen's Compensation Commission for rulings and interpretations. They may also have to rely upon medical services from one or more doctors who have a general practice in their community rather than to have a company doctor. It has been suggested that this latter condition may increase the frequency of one- and two-day lost time injuries in small plants.

### The Problems Can Be Solved

Undoubtedly all of the problems which I have mentioned will be given very careful consideration both by the proper committees of the National Safety Council and also by the sectional committee on accident statistics operating under the procedure of the American Standards Association. Talking as an individual and not in any official connection with either the National Safety Council or the American Standards Association, it seems to me that all of these conflicts can be solved, although undoubtedly there will have to be a certain amount of compromise and give-and-take among the various interested parties.

As far as contests are concerned, some people have suggested that the safety engineers keep two entirely separate and independent systems of records, whereby one system can be used for contests, and a second system used for accident statistical purposes. From my own point of view, I know of many safety contests which are not particularly concerned with either the frequency or severity rates, and it may even be possible

to run a contest without any reference to a definition of a lost-time accident. It might be possible to devise two separate definitions, one concerning the accidents which should be recorded for statistical purposes, and a separate definition which might be given a new name rather than to call it the definition of a lost-time accident. This new definition could then be custom-made in order to fit the particular requirements of contests.

There is still a further suggestion which might be worked out on a practical basis. At present the American Standard defines six types of injuries, although it suggests that standard rates be prepared upon a four-class basis whereby only deaths, permanent total disabilities, permanent partial disabilities, and temporary total disabilities are included in the rates. It will be seen that we already have definitions for temporary partial disabilities and for first aid cases which are used by some engineers in order to obtain further information for accident prevention work although these are not regularly included in either statistics or contests. Perhaps from a further study of these six classes, or by the addition of some new classifications, it would be possible to use a part of these classifications for contests, but with a definite understanding that members who enter the contest must keep and report their records concerning all of the various classifications which have been defined.

### Nationally Uniform Interpretations Recommended

The other conflicts concerning large and small companies, and the variations in workmen's compensation rulings, do not appear to be too serious. The National Safety Council has already issued several pages of interpretations in its Safe Practice Pamphlet No. 21, and it would appear that a possible solution would be to prepare a uniform set of interpretations to be used throughout the United States rather than to rely upon the individual workmen's compensation rulings. In this connection probably many of the interpretations which have already been prepared by the National Safety Council could be used. It would also be important to set up an Interpretations Committee in order that any new problem might be referred to this committee. The records of this committee could be compiled at stated intervals and distributed to all interested parties and would eventually be included in the interpretation section of any safe practice pamphlet or standard. Such a plan is now under consideration.

It has been one of the policies of the American Standards Association that standards should be dynamic, living documents, and that they should be revised whenever necessary in order to keep them up to date with all accepted ideas. I think we can all see from the questions and problems which have been received that there is a great deal of interest in the subject of accident statistics at the present time. Undoubtedly, as soon as changes in ideas crystallize to the point where they can be recognized as being the consensus of those generally concerned with this problem, an effort will be made to revise the standard in accordance with these new ideas. I should like to take this opportunity to thank publicly all of the safety engineers and other representatives who have sent in suggestions on this subject. I should also like to invite any additional safety engineers who have suggestions or opinions on this subject to write to the American Standards Association in order that the sectional committee may have the benefit of their ideas.

## Argentina Takes First Step Towards a Spanish Technical Dictionary

**S**PANISH is a rich, dynamic language which (apart from the pure Castilian of the Spanish Academy lexicon) has been richly enlarged by a great number of words, idioms, and expressions in general use in the various Spanish-speaking nations of the Americas and in the Philippines.

Yet, rich and versatile as Spanish is from the literary and cultural point of view, it lacks the wealth of technical terms and expressions to be found in English. The fact that advancement in applied science and industrial development has proceeded in Spanish-speaking countries at a much slower pace than in Great Britain and the United States, as well as (it may be) the extremely conservative character of the Spanish Academy, are factors which have tended to retard the development of the language in this direction.

Programs of national industrial development are the order of the day throughout the world, and consequently the need for standardizing Spanish technical terms so as to put an end to the present-day confusion is becoming acute.

An interesting step in this direction is the *Vocabulario* which IRAM (the Argentine Standards Institute)

has recently compiled, and a copy of which has been received by the Inter-American Department of ASA.

The background for this work is to be found in the nomenclature adopted by IRAM in its standards. The *Vocabulario* may be looked upon as the embryo of a Spanish technical dictionary. As the standardizing work of the Argentine Institute develops into new fields and subjects, standard nomenclature will be established and the new words and expressions so standardized will be added to the present volume. The current edition contains some one thousand terms with clear definitions, and with references to the particular paragraph of the particular IRAM standard from which each word or expression has been culled.

In addition to the new *Vocabulario* a specialized vocabulary, issued several years ago in the Argentine by the local committee of the International Electrotechnical Commission, gives definitions and translations of electrical terms. This vocabulary is in four languages—Spanish, French, Italian, and English.

—Reviewed by Alberto Magno-Rodriguez,  
in charge of New York office, ASA Inter-  
American Department.

### ASTM Monograph on Paper and Paperboard

A new *Monograph on Paper and Paperboard*, just issued by the American Society for Testing Materials through the work of its Technical Committee D-6 on Paper and Paper Products, discusses the significance of a more commonly used test and defines terms and nomenclature of properties of paper related to these tests. Following a discussion of the nature of paper properties there is a chapter covering the action of water on paper and its significance; finally, an extensive section covers definition of terms, nomenclature, and properties of various classes of paper and paperboard. In this part there is discussion on the following: Bond and writing paper, envelop and printing papers, paper towels and toilet tissues, condenser paper, bristols, paperboard, building and wrapping papers.

A major portion of the book discusses tests and their significance, including the following: Acidity and pH, ash (mineral content), basis weight, bursting strength, color compressibility, hardness and softness, fiber identification, folding endurance, foreign material (dirt), formation, imperfections, ink receptivity, machine direction (grain direction), moisture content, opacity, porosity or air permeability, resiliency or elasticity, rosin size, surface bonding strength, surface texture, tearing strength, tensile breaking strength, thickness and density, water resistance, and wire and felt sides. Following many of the discussions significant references are listed. A list of the ASTM and TAPPI methods of testing paper is included.

A detailed index completes the 120-page publication, which was edited by Roger C. Griffin. Many other authorities in this field cooperated, including C. C.

Heritage, chairman of the Subcommittee on Significance of Test Methods of Committee D-6, and L. S. Reid, chairman of the main committee.

Copies of the *Monograph* in heavy paper cover can be obtained from the American Society for Testing Materials, 260 S. Broad St., Philadelphia 2, Pa., at \$1.50 each, with reduced prices on orders in quantity.

### Military Change Specifications to Require Higher Quality

A trend on the part of military and naval procurement agencies toward raising the quality of materials required in specifications where less desirable materials or methods had been substituted as a result of war shortages is evident today with the easing of former scarcities. The present tendency is to return to pre-war standards as components and ingredients become available, announcements from Washington indicate. This may mean, it is explained, that increased use by the military of valuable ingredients which improve the quality of many products may limit their use in the manufacture of civilian goods. Paints, varnishes, enamels, and protective coatings generally are reported to be in this class. Alloy steel is another example. For many months tin, tungsten, vanadium, and molybdenum have been in tight supply and under stringent control. This necessitated downgrading of specifications for castings of various kinds. Specifications were changed, however, only when it was determined that such change would not affect the combat usefulness of the end product. As the materials used in making alloys become freer, specifications for all castings will be upgraded.

# The NE Steels and Industrial Standards

by Charles M. Parker

*Secretary, General Technical Committee,  
American Iron and Steel Institute*

WHEN the landing barges of the invasion forces of the United Nations were beached on the coasts of Africa and Sicily, on the coast of Norway, and on myriad islands in the south Pacific, few people had any knowledge of the great amount of industrial study and research which helped to get them there. Probably fewer still would connect those heroic military efforts with industrial standards for such prosaic things as tests for hardness and grain size of steel. Yet the odds are that if such standards were not available, well understood, and intelligently used by engineers and metallurgists the success of our arms would have been long delayed.

## NE Steels Make More Effective Use of Alloys

Wherever a soldier or sailor of the United Nations fights, some portion of his equipment is made from the National Emergency steels which were devised to make more effective use of the alloying elements used in steel and to compensate for critical shortages of those elements in order that the steel industry could produce ever-larger tonnages of alloy steel with static or even slightly receding supplies of nickel, chromium, and molybdenum.

To devise, produce, and fabricate those steels into engines of war within the relatively short period of time in which it was done would not have been possible without the benefit of standard tests and procedures which permitted the job to be split up among many men and many laboratories.

Using the "End-quench Test for Hardenability of Steel" (ASTM Specification A 255-42 T) and "The Classification of Austenite Grain Size in Steels" (ASTM Specification E 19-39 T), metallurgists of the steel industry were able to shuttle rapidly among one another homogeneous experimental data taken from multitudes of tests and finally to compile from those data a set of dependable steel compositions, lean in alloy content yet high in performance values, and so make possible the production of some 32,500,000 tons of alloy steel ingots within three years.

A recital of the facts involved in this most important development work has little of the heroic in it, yet it was not without its moments of triumph, sweet to warrior and technician alike.

## Alternatives for Nickel Steel Requested

Some weeks before the nickel shortage became generally known, the Committee on Manufacturing Problems of the American Iron and Steel Institute requested the Technical Committee on Alloy Steel to prepare a factual schedule of possible alternates for nickel steels. The results of the committee's work were published in May, 1941, under the title "Possible Substitutes for Nickel Steels." That work enjoyed a unique welcome

in the field of material substitution providing, as it did, sound technical recommendations for substitute steels containing little or no nickel.

In recommending alternates for nickel steels, chromium and molybdenum were drawn on freely. Partly as a result of that, partly as a result of the reduction in sources of supply for chromium, and partly as the result of a shift which had started well before the war, chromium was soon restricted in the same manner as nickel. Accordingly, the Technical Committee on Alloy Steel developed alternates for chromium and nickel-chromium steels which are now known as the NE series or National Emergency steels, and which were published by the Institute in January, 1942, under the title "Possible Alternates for Nickel, Chromium, and Chromium-Nickel Constructional Alloy Steels."

In devising alternates for nickel, chromium, and nickel-chromium constructional alloy steels, full use was made of the cooperative method of devising steel compositions. Members of the Technical Committee on Alloy Steel met with members of the Iron and Steel Division of the Society of Automotive Engineers and other interested parties, and laid out a plan of action, taking into consideration not only the immediate shortages of nickel and chromium, but looking into the future a bit to see what the scrap situation might be in an effort to take maximum advantage of any opportunities that might become apparent.

After consideration of the alloying elements which could be used in alternate steels and the quantities of each which would be permissible under the provisions of the many limitation orders of the War Production Board, it became necessary to select a means of evaluating the compositions selected in terms of their mechanical properties.

## Tensile and Other Mechanical Tests Are Time Consuming

Because an excessive amount of time would have been consumed in making standard tensile and other mechanical property tests of all the alternate compositions, the committee was of the opinion that for general applications a comparison of standard end-quench hardenability data would suffice as a guide to the application of the alternate steels.

In August, 1942, a shortage of molybdenum became apparent and it became necessary to revise the original NE steels. This shortage of molybdenum was one which became acute in a very short period of time, and therefore speedy action became necessary in order to devise steels which could be put into production rapidly and which would substitute adequately for both the standard and National Emergency steels then in use.

NOTE: An article about the National Emergency Steel Specifications will be published in a forthcoming issue.

The War Production Board laid down the following consideration: (1) Complete elimination of the use of virgin molybdenum in constructional steels, or the establishment of new types of steel which would require smaller amounts of molybdenum, (2) consideration of steels with higher manganese and silicon contents to eliminate molybdenum, (3) selection of steels which would permit the maximum utilization of alloy scrap in all producing plants with the use of the least amount of virgin molybdenum.

#### Committee Has Acceptable Report in Ten Days

Between the time that the original request was received from the War Production Board and the time that the members of the Technical Committee on Alloy Steel rendered a final acceptable report, only ten days elapsed. The job was split up and portioned out by telephone to the top-flight metallurgists in five prominent alloy-steel producing companies. Each of the metallurgists mobilized his laboratory staff for day and night shift and the job got under way at once. Countless times during the week that followed the five metallurgists consulted with one another by telephone; finally came the day on which the War Production Board meeting was scheduled.

The metallurgists met for the first time since the job was assigned to them at 7:30 A. M. in the Union Station in Washington. Over the breakfast table the results of their experiments were consolidated into a report. A few hours later full descriptions and hardenability characteristics of the new steels were laid before the WPB officials and within a very few weeks the new steels, officially approved for war use after strenuous tests, were put into production.

The results of that work were published in September, 1942, under the title "Supplementary National Emergency Steels NE 9400, 9500, and 9600 Series." In March, 1943, complete mechanical property data

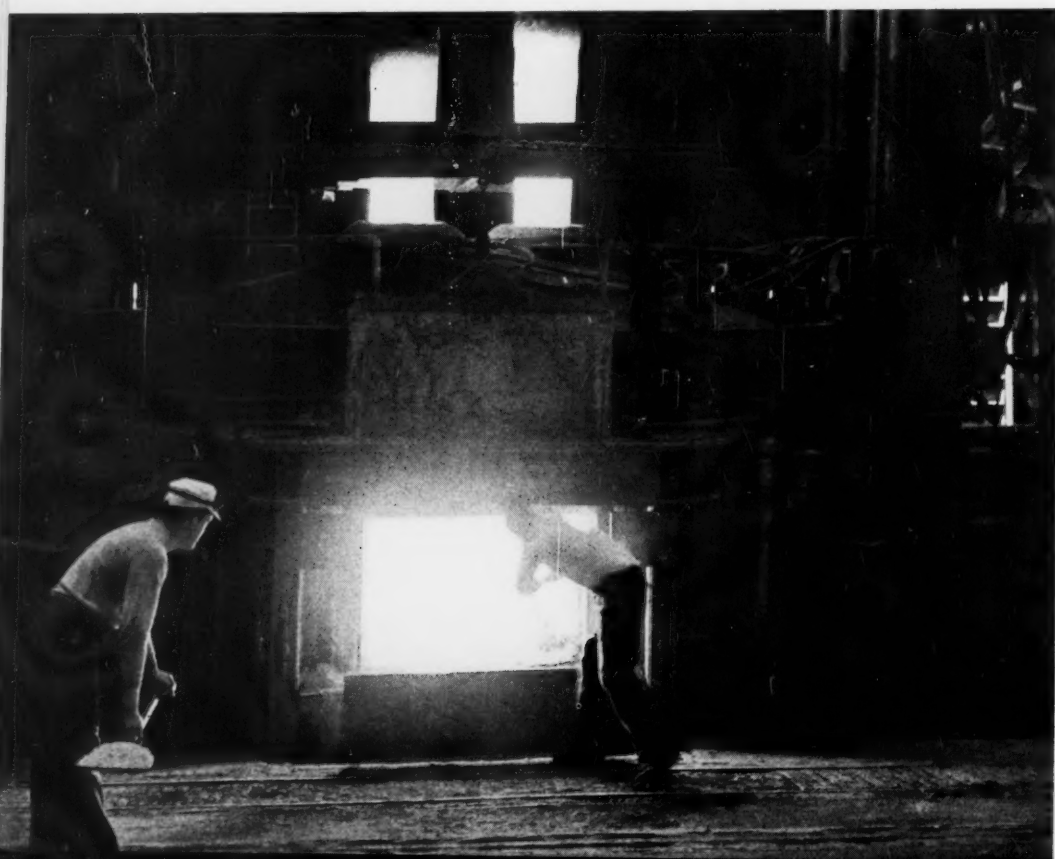
were published by the Institute under the title "Mechanical Properties of NE 9400, 9500, and 9600 Series."

As the war effort continued and success came to the arms of the United Nations, additional supplies of alloying elements became available both through imports and through discoveries of new deposits within the continental United States. Then, too, superior refining methods were developed which made possible the use of alloy deposits which had been thought unworkable. Those developments made it necessary again to change the compositions of the NE steels. This time the change was in the direction of enrichment rather than extraction. The nickel content of all the series was increased, the molybdenum content of some of the series was increased, and new series, the 9700, 9800, and 9900 series, richer in nickel and chromium than other NE steels, were added to provide steels of hardenability characteristics intermediate between the NE 8700 series and the A-4300 series.

By the end of 1943 one-third of all the alloy steels produced were NE steels. Virtually every piece of ordnance used by the Army contained some NE steels accepted only after the most rigorous tests. During 1943 alone the use of NE steels is estimated to have saved 24,000 tons of nickel. In addition, about 10,000 tons of nickel, 6,000 tons of chromium, and 2,000 tons of molybdenum were recovered from scrap by using the scrap to make new NE steels.

#### Standard End-Quench Test Now in Widespread Use

The standard end-quench test which was used so successfully in all the development work outlined above is a product of the ingenuity of metallurgists of the automotive industry. It was developed originally to provide a speedy test to check the heat-treatment characteristics of individual heats of steel. After some six or seven years of use in that field it was adopted by steel producers and is now in widespread use.



Seventy tons of special alloy steel for war use are produced with each charge in this electric furnace.

Mechanics." ne to the es of al- imports the con- refining the use workable, o change e change n extrac- increased, was in- 00 series, E steels, character- and the

For many years it was the practice of steel consumers and producers alike to describe steel in terms of its chemical composition limits and ranges. In the field of alloy steel that practice has been more pronounced than in the field of carbon steel because alloy steels may contain many more elements which affect their range of usefulness than do carbon steels.

The original reason for describing steel in that fashion was an attempt to secure reproducibility of results. In the early days of steel technology our knowledge of the effects of the several elements on the mechanical properties of steel was much more imperfect than it is today. It was thought that any two heats of steel, the compositions of which fell within the same chemical limits, would perform in the same manner.

Today we know that that is not true. Deoxidation practice and grain size, to name only two major variables, have profound effects not only on the mechanical properties of steel but on the more intangible properties of "personality" in such operations as forging and machining. It is known that the presence of greater or lesser amounts of manganese, nickel, chromium, molybdenum or vanadium, for example, changes the quenching temperature, the quenching media, and the tempering technique, but when the many different types of alloy steel are properly heat treated within their respective carbon content classes, the results achieved are so similar that a high degree of interchangeability in both processing and performance is possible.

That interchangeability is not wholly apparent from a study of the results of the tensile test alone, because such a test is static and does not provide any information relative to changes which take place within the test bar as a result of changes in the microstructure of the steel.

In order to secure that information it is necessary to heat-treat many samples of different sizes, take test bars from each, and run a tensile test on each. In order to overcome difficulties attendant upon such a procedure a more simple test known as the standard end-quench hardenability test was devised by metallurgists in the automotive industry.

#### The Test

That test consists in water quenching under closely controlled conditions one end of a 1-inch diameter round of the steel under test. After cooling, Rockwell hardness readings are taken of the full length of the bar, under standard conditions, and the data so secured are plotted on a standard test form.

From the data secured in that test one may determine, (1) the maximum hardness of the steel—a function of the carbon content, (2) the depth of hardness—a function of the alloy content, (3) mass effect—a function of the cooling rate, (4) the probable microstructure of the steel in the finished part, and (5) the ordinary mechanical properties.

Recently, a committee of metallurgists of the Society of Automotive Engineers and American Iron and Steel Institute completed an intensive original research project to determine the hardenability limits within which 37 different grades of steel could be produced and used. Those limits are now in use in specifying and producing large quantities of steel. The study is being continued to embrace all standard alloy and National Emergency steel compositions.

## For Meetings in New York Make Hotel Reservations Early

Hotel rooms in New York are at a premium. If you are planning to attend a meeting in New York and expect to stay over-night, please wire your hotel as early as possible. Hotels make an effort to accommodate regular patrons. It is advisable, therefore, to wire a hotel where you are known.

## Shoe Shank Manufacturers Become ASA Associate Member

Affiliation of the Shoe Shank Manufacturers Defense Group as an Associate Member of the American Standards Association, focuses the interest of shoe shank manufacturers in ASA activities. This interest developed more than three years ago when consideration was given to submitting shoe shank standards to the ASA for approval.

In accordance with ASA recommendations at that time, the Group have presented its standards to boot and shoe manufacturers. It is understood that nearly all shoe shank manufacturers now follow the standards of this Group and that the majority of the leading shoe manufacturers purchase shanks in accordance with these standards.

The Group believes that a labeling system can be developed when its standards receive eventual approval as American Standards. Arthur S. Harding is secretary of the Shoe Shank Manufacturers Group.

## Government Purchasing Agents Set Up National Institute

A new non-profit educational and technical organization of governmental purchasing agencies of the United States and Canada, the National Institute of Governmental Purchasing, has just been established, with the object of promoting centralized buying at all levels of government. The Institute will work to improve the organization and administration of governmental buying through a regular and systematic interchange of information and experience among governmental buying agencies and through continuous research in their problems. It will also develop and promote standards and specifications for use in governmental buying.

Albert H. Hall, formerly chief of the Bureau of Public Service Training in the New York State Education Department, is executive vice-president and in charge of the office of the Institute. Alvin J. Holm, city purchasing agent, Los Angeles, California, is president; Albert Pleydell, Commissioner of Purchase of the City of New York, vice-president; Harold F. Burnworth, Department of Supplies, Pittsburgh, Pa., treasurer; and Joseph W. Nicholson, city purchasing agent, Milwaukee, Wisconsin, recording secretary.

The new Institute will have its offices at 730 Jackson Place, N.W., Washington, D. C.



163 persons, mainly women and children, lost their lives in this holocaust

## ASA Committee Organizes for Work on Safety Standards for Circus Tents

**T**HE circus fire in Hartford, Connecticut, where 163 persons lost their lives this summer, has brought a request to the American Standards Association for the development of standards for circus tents which would help prevent such fires in the future.

At the request of the Building Officials Conference of America, the American Standards Association has now authorized a project to develop uniform requirements to reduce hazards in tents, carnivals, and other places of outdoor assembly. The committee already set up under the ASA building code program to develop safety requirements for permanent and portable grandstands is being reorganized to work on the new project.

The scope of the work has been defined as including requirements for protection against fire, storm, collapse, and panic hazards in grandstands, tents, and places of outdoor assembly, and in temporary and portable indoor stands. Methods of erection of temporary and portable stands, as well as design, construction, and methods of erection of tents will be considered. Means of egress, fire protection, and fire fighting equipment, as well as sanitary arrangements, will all be given serious attention.

The committee, which is undertaking the work on the new project, will represent the groups concerned with these problems, and will work, it is expected, under the sponsorship of the Building Officials Confer-

ence of America and the National Fire Protection Association. The NFPA has been invited to serve as joint sponsor but is unable to take action on the invitation until its Board of Directors meets in January.

In the meantime, however, the Building Officials Conference and the NFPA have organized a small drafting committee to prepare a draft standard for tents and other assemblies under canvas. This will speed the work of the sectional committee, which will have the draft for study at its first meeting.

In requesting the project, the Building Officials Conference of America reported that cities and states, alarmed by the circus disaster at Hartford, are already engaged in promulgating rules and regulations and adopting ordinances to control circuses. Such activities might lead to many conflicting regulations and requirements not necessarily in the public interest, the Conference declared, which would be eliminated if a nationally acceptable code under the building code program of the ASA were available.

Members of the drafting subcommittee which is already at work on the proposed safety requirements are:

Nolan D. Mitchell, National Bureau of Standards, *Chairman*  
William Ennis, Building Commissioner, Hartford, Conn.  
Calvin G. Lauber, National Board of Fire Underwriters  
Henry G. Thomas, Deputy Chief of Fire Department, Hartford, Conn.  
Donald Vaughn, Aetna Casualty and Surety Company

# Six New Standards for Lantern Slides, Projectors, and Photographic Printing Equipment

by Oscar W. Richards<sup>1</sup>

*Chairman, Subcommittee 7 on Printing and Projection Equipment of ASA Sectional Committee on Standardization in the Field of Photography*

**D**IMENSIONS and performance requirements for lantern slide projectors and the lantern slides to be used with them, as well as specifications for opaque projectors, were completed recently by Subcommittee 7 of the ASA Sectional Committee on Standardization in the Field of Photography. Standard dimensions and performance requirements for photographic printing equipment were also completed. Six new American Standards, now published by the American Standards Association, are the results of this subcommittee's work. These standards form a part of the large program for standardization of peacetime photographic equipment which up to the present time has resulted in 58 national standards.

The six new standards and what they accomplish are described below.

## American Standard Dimensions for Lantern Slides, Z38.7.13-1944

This standard codifies the best American practice and gives limiting sizes for the slides and the amount of the slide projected onto the screen which will serve as a guide to the beginner and provide the designer of projection equipment with practical-sized apertures for efficient illumination.

Two sizes are recognized:  $3\frac{1}{4} \times 4$  and  $2 \times 2$  inches. The over-all dimensions insure that the slide will fit properly into the slide carrier of the projector and that the carrier will contain the slides without undue looseness of fit. Otherwise, successive slides will not be in focus on the screen. To accomplish this, the thickness of the bound slides must not exceed  $5/32$  inch and  $1/8$  inch, respectively. The area to be projected is limited to  $3 \times 3$  inches, with a strong recommendation of  $2\frac{3}{4} \times 3$  inches for the larger size. The smaller  $2 \times 2$  inch slides have apertures of  $23 \times 34$  mm,  $26.2 \times 38.1$ , and  $17.5 \times 23$  mm for double-frame, Bantam, and single-frame sizes. To assist the operator of the projector, a guide, or thumb mark, is placed in the lower left-hand corner of the slide when the slide is held in the proper position to appear on the screen.

Slides made in accordance with these values will project to best advantage and bring credit to the photographer as well as the user of them. This is especially important in meetings of scientific and technical societies and will avoid some of the disappointments

that have occurred when at the last minute the slides have been found too big to go into the projector.

## American Standard Specifications for Lantern Slide Projectors, Z38.7.14-1944

American industrial individualism has limited the amount of standardization of lantern-slide projectors as compared with British and European practice wherein the sizes of condensing lenses and projection objectives are also agreed upon. In the new American Standard for such projectors the desirability of minimizing stray light which may annoy the spectators is indicated. Recommended focal lengths are given for projection lenses.

The standard provides that the temperature of the slide shall not exceed 100 C (212 F) and the ratio of corner-to-center illumination on the screen should not be less than 65 percent when both are measured as specified in the American Standard Methods of Testing Printing and Projection Equipment, Z38.7.5-1943.<sup>2</sup> The

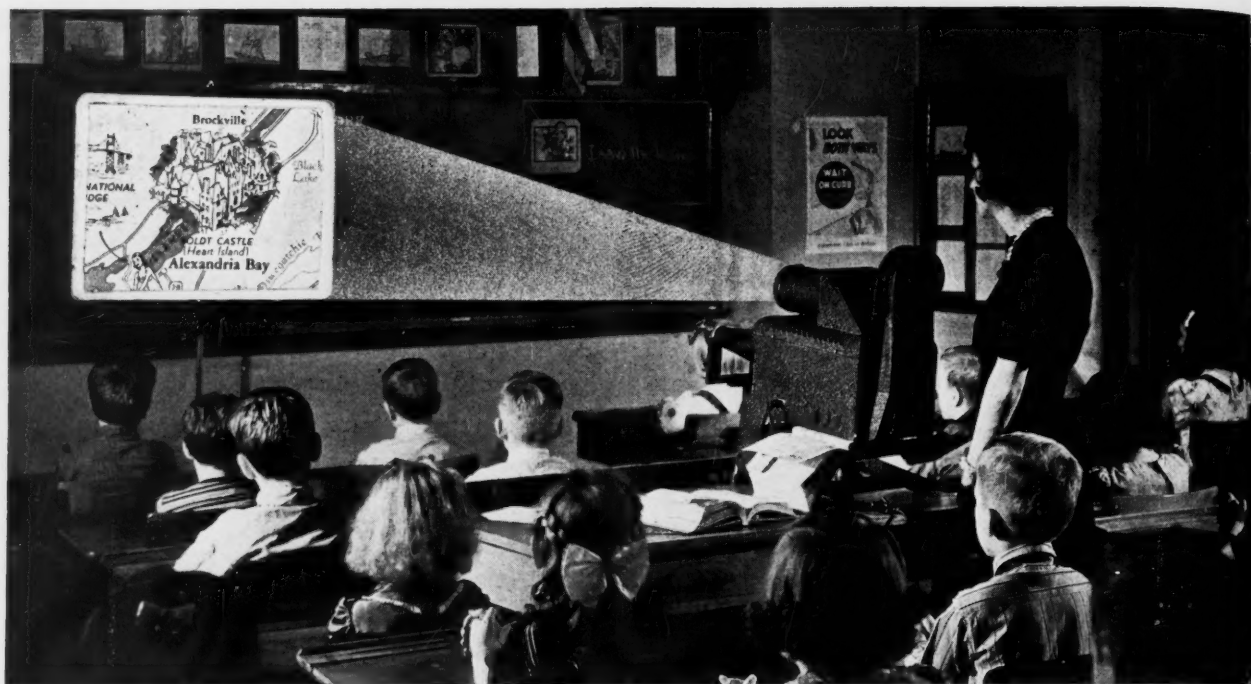
Subcommittee 7 on Printing and Projection Equipment prepared the six new standards for lantern slide projectors, lantern slides, projectors of opaque material, and photographic printing equipment. Members of this committee are:

Oscar W. Richards, Spencer Lens Company, *Chairman*  
F. M. Bishop, Eastman Kodak Company, Rochester, N. Y.  
C. W. Gartlein, Cornell University, Ithaca, N. Y.  
U. O. Hutton, Cambridge Instrument Company, Inc., Ossining, N. Y.  
O. M. Miller, American Geographical Society, New York, N. Y.  
W. R. Patton, Optical Division, Argus, Inc., Ann Arbor, Mich.  
Lieut. W. A. Pfaff, Signal Corps Photographic Center, Long Island City, N. Y.  
J. K. Polhemus, Ansco Camera Works, Binghamton, N. Y.  
Commander O. S. Reading, U. S. Coast and Geodetic Survey, Washington, D. C.  
V. D. Tate, Division of Photographic Archives and Research, The National Archives, Washington, D. C.  
V. E. Whitman, Folmer Graflex Corporation, Rochester, N. Y.  
L. V. Foster, Bausch & Lomb Optical Company, Rochester, N. Y.

Copies of the standards can be obtained from the American Standards Association at 10 cents each.

<sup>1</sup>Development Division, Spencer Lens Company, Buffalo, N. Y.

<sup>2</sup>For a description of this standard see, "How to Check Performance of Photographic Printing and Projection Equipment," INDUSTRIAL STANDARDIZATION, May, 1944, page 85.



A projector for opaque materials being used in a classroom.

screen illumination should be free from noticeable bands or patches of different brightness and any two adjacent areas of the nine areas measured according to the test for lumen output should not differ by more than 25 percent.

**American Standard Specifications for Projectors for Opaque Materials for Use in Small Auditoriums, Z38.7.4-1944**

Projectors for opaque materials cannot be designed to give as much light on the screen as lantern slide projectors, so a corner-to-center ratio of 33 percent is allowed in the new American Standard. To guard against excessive heating the standard provides that a piece of white blotting paper placed at the aperture on an insulating block should not increase in temperature more than 35 C (63 F) above an ambient room temperature of + 25 C (+77 F). Focal lengths of lenses, focusing range, and a minimum aperture size of 6 × 6 inches are recommended.

**American Standard Specifications for Contact Printers, Z38.7.10-1944**

The new American Standard specifications for contact printers cover photographic contact printers for amateur and professional uses except in the graphic arts, or for other special purposes. They provide that printers for a given nominal size shall accommodate all negative and positive materials for that nominal size and the exposure opening shall accommodate the full picture area for that nominal size. This is necessary, as roll film, cut film, and plates differ slightly in their dimensions. To make certain that these sizes are understood, the standards of Subcommittee 1 for the sizes of these materials and for photographic papers are referenced.<sup>3</sup> This will avoid the disappointment in finding that another type of material of the same nominal size will not fit a given printer.

The aperture-masking angles shall be 90 degrees  $\pm$  0 degrees 10 minutes. This may read as a close tolerance, but the committee found that greater tolerances would not give a picture which would appear to be square or rectangular. The corner-to-center ratio of illumination should be 65 percent or greater and the field should be free from local irregularities having intensity differences of more than 15 percent per inch. The method of measuring the corners is given in the standard and their illumination, it is provided, should be as great, visually, as the area actually measured. Some types of measuring instrument cannot be used at the limit of the corner, hence the standard specifies where to measure to insure that measurements made by different people will be comparable.

The temperature rise in one hour from intermittent exposures to ten seconds on and ten seconds off should not exceed 40 C (72 F) and the actual temperature should not exceed + 65C (+149 F) when measured as described in the American Standard Methods of Testing Printing and Projection Equipment, Z38.7.5-1943. Limits are given for poor contact as measured in the standard just cited.

**American Standard Specifications for Printing Frames, Z38.7.11-1944**

The same dimensions and performance for size accommodation, aperture masking angles, and contact as those just outlined for contact printers, are to be found in the standard Specifications for Printing Frames.

<sup>3</sup> These standards are American Standard Dimensions for Film Pack Tabs and Films, Z38.1.1-1941; American Standard Dimensions for Amateur Roll Film, Backing Paper, and Film Spools, Z38.1.7-1943 through Z38.1.15-1943; Proposed American Standard Dimensions for Professional Portrait and Commercial Sheet Film (Inch Size), Z38.1.28; Proposed American Standard Dimensions for Photographic Dry Plates (Inch Sizes), Z38.1.30; Proposed American Standard Dimensions for Photographic Dry Plates (Centimeter Sizes), Z38.1.31; Proposed American Standard Dimensions of Inch-Size Photographic Papers, Z38.1.43.

**American Standard Specifications for Masks (Separate)  
for Use in Photographic Contact Printing,  
Z38.7.12-1944**

Rectangular or square masks should have the same angle tolerance as given above for contact printers. Their thickness should not exceed 0.010 inch (0.25mm) in order to assure good contact between the negative and the positive. Any light passed by the mask should not fog the sensitized material under normal handling.

Masks for use with roll-film negatives for sizes smaller than  $2\frac{1}{4} \times 2\frac{1}{4}$  inches should have a mask opening between 1/32 inch and 1/16 inch smaller in both directions than the nominal size. For sizes  $2\frac{1}{4} \times 2\frac{1}{4}$  inches and larger the mask opening should be between 1/16 and 1/8 inch smaller in both dimensions than the nominal size.

Such a variety of dimensions and specifications shows something of the nature and extent of the work of one subcommittee in the field of photography. Dimensions may be standardized in detail. The resulting agreed-upon uniformity then facilitates the manufacture and use of the materials. Performance specifications are not so easy, because the problem of quality enters. The more expensive equipment must be better both in structure and performance to be worth the added cost. The cheapest equipment cannot be expected to meet our specifications, yet it may be entirely adequate for the intended use. The better equipment should comply with the specifications. Special-purpose equipment demands still more rigid requirements as well as other details.

These standards are a beginning. They will be revised as advances in the art require, and they will be extended as may become desirable.

Your comments and criticism are invited and will be appreciated by the American Standards Association. This is your chance to contribute to this work in order that you may gain even more from unification and adequate performance of your equipment.

**Douglas Fir Plywood Association  
Joins ASA as Associate Member**

The Douglas Fir Plywood Association, new Associate Member of the American Standards Association, has participated in standards activities for many years, notably in the work of the National Lumber Manufacturers Association, the National Bureau of Standards, and the American Society for Testing Materials.

Douglas Fir Plywood, Commercial Standard CS45-42, now in its fifth edition, was developed by and continued under the direction of the Douglas Fir Plywood Association and the building industry under the procedure of the National Bureau of Standards. In addition, the DFPA cooperated in the work on ASA project A62, Coordination of Dimensions of Building Materials and on A51, Building Code Requirements for Fire Protection and Fire Resistance, another ASA project.

Officers of the DFPA are: E. W. Daniels, president; E. Q. Walton, vice-president; N. S. Perkins, technical director.

**Federation of Textiles  
Joins ASA**

The National Federation of Textiles, Inc., which represents approximately 90 percent of the rayon fabric producers in this country, has become an Associate Member of the American Standards Association.

Organized in 1872, the Association has taken a leading part in formulating standards of grading, trade practice, etc., in the production and distribution of fine fabrics.

Officers of the Association are: William G. Lord, Galey and Lord, Inc., president; Otis Stanton, Hathaway Manufacturing Company, vice-president; Miss Irene Blunt, secretary-treasurer.

**New Standards Specify Performance  
For 16-Mm Motion Picture Prints**

SINCE the War, the use of motion pictures by the Armed Forces and industry as teaching and training aids has increased many fold. Because of the saving in cost and ease of handling, most of this material has been released on 16-mm film. In many instances much of this material was of exceedingly poor picture and sound quality. At the request of the Armed Forces, Subcommittee C on 16-Mm Laboratory Practice of the War Committee on Photography and Cinematography, Z52, has developed a performance specification for 16-Mm Motion Picture Release Prints, which insures minimum quality. This standard, which has since been approved as a Joint Army-Navy Specification, JAN-P-55, will be used both by the laboratory and purchaser not only to insure minimum quality but also to insure a uniform product from print to print.

Subcommittee C has also developed, in conjunction with the above-mentioned standard, American War

Standard Specification for Leaders, Cues, and Trailers for 16-Mm Release Prints Made from 35-Mm Preprint Material, Z52.19-1944. This specification has eliminated much of the extraneous material which was carried over from 35-mm preprint material and which is not needed in 16-mm practice. It also includes test sections for use by the processing laboratory and purchaser of release prints to determine adherence to the limits prescribed in the 16-mm release print specification.

For the first time, the specifications for the 16-mm printer aperture (Z52.24, Z52.25, Z52.26, Z52.27-1944) have been adopted, which will insure a uniform picture size on all 16-mm release prints. Heretofore, considerable variations existed which were often quite objectionable to audiences viewing the projected film.

Copies of the above standards are available from the American Standards Association, 70 East 45th Street, New York 17, N. Y.

# New Test Films Check Performance Of Sound Motion Picture Equipment

A new Specification for Test Film for Checking Adjustment of 16-Mm Sound Motion Picture Projection Equipment, developed by Subcommittee B on 16-Mm Sound Film of the ASA War Committee on Photography and Cinematography, has been approved as American War Standard under the designation Z52.2-1944.

In its work, Subcommittee B had extensive cooperation from the Research Council of the Academy of Motion Picture Arts and Sciences. There was continuous coordination between the Research Council on the West Coast and members of Subcommittee B who are mostly on the East Coast. Coincidental with the development of the War Standard specification, the Research Council prepared a test film for the Armed Forces in accordance with the standard, making modifications suggested by reviews, by Subcommittee B, of sample check prints. The first release print of the new test film made in accordance with the War Standard specification was exhibited at the Society of Motion Picture Engineers' Fall Conference in New York October 17, only six days after the specification had received final approval as American War Standard.

Through the facilities of the Research Council, prints of the test film will be furnished the Armed Forces for field adjustment of 16-mm sound projectors used extensively for training and morale purposes. The test film will likewise be made available to war industry where 16-mm projectors are used for training and informational films. Included in the film are complete instructions for its use, together with a number of excerpts from Hollywood productions by which inexperienced projectionists may judge whether their equipment is operating properly.

Multi-frequency, flutter, buzz-track, sound-focusing, and signal-level test films for precision adjustment of 16-mm sound projectors, made in accordance with American War Standards previously developed by Subcommittee B,<sup>1</sup> are now being furnished the Armed Forces by the Society of Motion Picture Engineers. The SMPE is also furnishing 16-mm test films for travel ghost and scanning-beam uniformity in accordance with American War Standards Z52.4-1944 and Z52.7-1944, and a resolving power test plate for 16-mm

<sup>1</sup> American War Standards Z52.8-1944 through Z52.11-1944, inclusive, and American War Standard Z52.17-1944.

## James L. Jones

James L. Jones, Technical Secretary of the Federal Specifications Executive Committee, died October 23, after a long illness. Mr. Jones had been connected with the work on Federal Specifications for many years, and had close contacts with all the individuals and organizations concerned with them. Because of the importance of Federal Specifications, which provide specifications for all equipment and material purchased by more than one government department, Mr. Jones had had wide acquaintance in industry. His contribution to the work will be missed.

projector lenses in accordance with American War Standard Z52.5-1944. With the exception of the latter standard and the travel-ghost standard which were developed by Subcommittee D on 16-mm projection of War Committee Z52, these standards were all formulated by Subcommittee B earlier this year.

A test film for projector picture unsteadiness, in accordance with American War Standard Z52.6-1944, developed by Subcommittee D, is now available from the Bell and Howell Company and Eastman Kodak Company.

One of the most important standards evolved by Subcommittee B is the new American War Standard for the Sound Records and Scanning Area of 16-mm Sound Motion Picture Prints, Z52.16-1944. In securing agreement on this standard, Subcommittee B resolved differences of opinion of nearly ten years duration. The dimensions finally set in the standard will tend to improve the sound reproduction of 16-mm sound prints by reducing scratch damage to sound tracks.

The test films developed to meet specifications set by Subcommittees B and D of Z52 and now available for 16-mm motion pictures are said to be superior in some respects and more comprehensive than those available for regular 35-mm motion picture equipment.

The American War Standards which describe test films for checking 16-mm motion picture projection equipment are available from the American Standards Association. They are:

Sound Film for Field Check.....	Z52. 2-1944
Travel Ghost Test Film.....	Z52. 4-1944
Picture Unsteadiness Test Film.....	Z52. 6-1944
Scanning Beam Uniformity Test Film.....	Z52. 7-1944
Multi-Frequency Test Film.....	Z52. 8-1944
3000-Cycle Signal Level Test Film.....	Z52. 9-1944
Buzz-Track Test Film.....	Z52.10-1944
Sound-Focusing Test Film.....	Z52.11-1944
400-Cycle Signal Level Test Film.....	Z52.17-1944

These standards can be obtained at 10 cents per copy for each standard.

## Handbook of Standards for Describing Surplus Property

The first two sections of a *Handbook of Standards for Describing Surplus Property* has just been issued by the Surplus War Property Administration to help contractors in listing such property. Sections I and II cover Metal and Metal Basic Products, and Wood Basic and Finished Products.

Copies are available at the office of the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

ASA Company Member Service

American Standards Association 70 East 45th Street, New York 17, N. Y.

Application for New Standards
(Must be returned by March 1, 1945)

Company Members of the American Standards Association are entitled to one free copy of each newly approved American Standard for the first \$50 of annual membership, and an additional copy for each \$100 beyond this.

NAME STREET
Person eligible to return list (We can give you his name, if necessary)
COMPANY CITY AND STATE

How to Order Your American Standards

- Find out who in your company has been named as representative to return this application.
Check the standards you want.
Give your list to your company representative, who will return it to us.
Your company is entitled to a special membership discount of 20 percent on copies over and above your quota of standards furnished by ASA without charge as part of its services to company members. (For explanation of quota, see above.)

Table with 4 columns: No. of Copies, ASA Number, Sponsor's Number, Title of Standard, Price. Rows include ASTM C90-44, ASTM C67-44, ASTM D49-44, ASTM D79-44, and various other standards with their respective prices.

Duplicate For Your Files November, 1944

ASA Company Member Service

American Standards Association 70 East 45th Street, New York 17, N. Y.

Application for New Standards

Company Members of the American Standards Association are entitled to one free copy of each newly approved American Standard for the first \$50 of annual membership, and an additional copy for each \$100 beyond this.

NAME COMPANY

How to Order Your American Standards

- Find out who in your company has been named as representative to return this application.
Check the standards you want.
Give your list to your company representative, who will return it to us.
Your company is entitled to a special membership discount of 20 percent on copies over and above your quota of standards furnished by ASA without charge as part of its services to company members. (For explanation of quota, see above.)

Table with 4 columns: No. of Copies, ASA Number, Sponsor's Number, Title of Standard, Price. Rows include ASTM C90-44, ASTM C67-44, ASTM D49-44, ASTM D79-44, and various other standards with their respective prices.

## Coonley to Be Deputy Director on Chinese WPB



Howard Coonley, member of the Board of Directors of the American Standards Association, and former ASA president, has left for Chungking to serve as Donald Nelson's deputy in setting up a WPB for China. Mr. Coonley, who is chairman of the board of the Walworth Company, has just been released from his duties as director of the Conservation Division of the War Production Board.

First announcements of the new program to intensify Chinese war production indicate that Mr. Nelson will stay in China only long enough to set up the new Chinese organization, and see that it is functioning smoothly. He will then turn over the direction of the program to Mr. Coonley.

Eugene M. Stallings will accompany the mission as technical expert in alcohol production; and a group of five steel experts will be headed by Herbert W. Graham, chief metallurgist of the Jones & Laughlin Steel Corporation.

Mr. Coonley was president of the American Standards Association, 1933-1935, and has been a member of the Board of Directors since 1929. He became head of the Simplification Branch of the WPB Bureau of Industrial Conservation in 1942 and director of the reorganized Conservation Division in January, 1943. He has just been named United States member of the United Nations Standards Coordinating Committee.

## New Committee to Help on Industrial Standardization

A Committee on Publications, made up of representatives of the ASA Board of Directors and the Standards Council, has been appointed by the Board to work with the ASA staff in the development of INDUSTRIAL STANDARDIZATION, official ASA publication.

Under the new program it is planned that the magazine will carry a larger volume of news and additional articles featuring the work of member organizations. Advertising may be included, subject to regulations developed by the committee and approved by the Board.

Members of the Committee on Publications appointed from the ASA Board of Directors are:

R. T. Griswold, President, Electric Advisers, Inc. (American Gas Association), *Chairman*  
Dr. Ole Singstad, Chief Engineer, New York City Tunnel Authority (American Institute of Consulting Engineers)

Members from the ASA Standards Council are:

Dr. Alfred N. Goldsmith, Institute of Radio Engineers  
F. M. Farmer, American Society for Testing Materials  
C. M. Parker, American Iron and Steel Institute

## Admiral Cochrane Will Speak at ASA Annual Meeting

Rear Admiral E. L. Cochrane, chief of the Bureau of Ships, U. S. Navy Department, is scheduled to be the principal speaker at the Annual Meeting of the American Standards Association, December 8. Admiral Cochrane has been actively interested in standardization for some time, and has been a member of the ASA Standards Council since 1940.

In addition to Admiral Cochrane's address, President Henry B. Bryans will report on the important developments in standardization during the past year; and H. S. Osborne, chairman of the Standards Council, will report on the work of standards committees under the supervision of the Council.

The Annual Meeting will be a luncheon meeting at 1:00 P. M. at the Hotel Roosevelt, New York, December 8.

## Safe Practices Recommended to Cut Injuries to Longshoremen

As a means of preventing the large toll of job injuries which has made the longshore industry one of the most dangerous in which to work, the Bureau of Labor Statistics of the U. S. Department of Labor has issued a booklet *Injuries and Accident Causes in the Longshore Industry, 1942*. A large part of the book consists of an analysis of accidents which occurred in 1942, and the causes for them, but the means for preventing such accidents is recommended in an appendix on Safety Codes. In this appendix are published the Maritime Safety Code for Stevedoring and Freight Handling Operations, and the Pacific Coast Marine Safety Code developed under the sponsorship of the Pacific Coast Marine Associations' Accident Prevention Bureau, 1929-1934.

Job injuries cost longshoremen more than a million mandays of work in 1942, the analysis of the industry shows, and practical safety measures could substantially reduce this toll, the Bureau of Labor Statistics declares.

The maritime safety code includes all direct and incidental cargo handling and stevedoring operations aboard ship and on the dock. It identifies the more important hazards, and offers safe practice rules covering personal and mechanical or physical faults. It is intended to help in establishing uniformity in safe operation, to serve as a guide to greater safety, and to coordinate and encourage the active participation of all concerned in a practical and effective effort towards observing reasonable requirements for safety and health.

Copies of the booklet can be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 10 cents each.

# Standards Issued by Associations and Government

(For new American Standards see pages 239, 242)

For the information of ASA Members, the American Standards Association gives here a list of standards received by the ASA Library during the last month. The list below includes only those standards which the ASA believes are of greatest interest to Members.

These standards may be consulted by ASA Members at the ASA Library, or copies may be obtained from the organization issuing the standard. The address of the organization is included for your convenience in ordering.

## Associations and Technical Societies

### American Society for Testing Materials (260 South Broad Street, Philadelphia 2, Pa.)

As a service to Company Members, the ASA maintains a sale file of all ASTM standards. These standards can be purchased from the ASA Sales Department.

*The letter T following a designation indicates the standard is Tentative. Standards are 25¢ each.*

#### Tentative Specifications for:

- Asphalt-Saturated and Coated Asbestos-Felts for Use in Constructing Built-Up Roofs D655-44T
- Asphalt-Saturated Asbestos Felts for Use in Waterproofing and in Constructing Built-Up Roofs D250-44T
- Chromium-Nickel-Iron Alloy Castings (25-12 Class) for High-Temperature Service B190-44T
- Lead-Coating (Hot Dip) on Iron or Steel Hardware A267-44T

#### Tentative Methods of:

- Testing Automotive Air Brake and Vacuum Brake Hose D622-44T
- Sampling and Testing Dipentene D801-44T
- Drum Test for Containers in Small Revolving Hexagonal Drum Box-Testing Machine D782-44T
- Testing Felted and Woven Fabrics Saturated with Bituminous Substances for Use in Waterproofing and Roofing D146-44T
- Sampling and Testing Pine Oil D802-44T
- Drop Test for Shipping Containers D775-44T

#### Tentative Method of Test for:

- Adhesiveness of Gummed Tape D773-44T
- Bursting Strength of Paper D774-44T
- Flammability of Treated Paper and Paperboard D777-44T
- Effect of Heating on Folding Endurance of Paper D776-44T
- Hot Extraction of Asphaltic Materials and Recovery of Bitumen by the Modified Abson Procedure D762-44T
- Hydrogen Ion Concentration (pH) of Paper Extracts D778-44T
- Time of Penetration by Water of Sized Paper and Paper Products (Dry Indicator Method) D779-44T
- Printing Ink Permeation of Paper (Castor Oil Test) D780-44T
- Puncture and Stiffness of Paperboard, Corrugated and Solid Fiberboard D781-44T
- Water Vapor Permeability of Paper and Paperboard D783-44T

#### Standard Definitions of:

- The Terms Gross Calorific Value and Net Calorific Value of Fuels D407-44T

#### Standard Method of:

- Conditioning Paper and Paper Products for Testing D685-44T
- Sampling and Testing Latexes of Natural Rubber and Synthetic Rubbers D640-44
- Laboratory Sampling and Analysis of Coal and Coke D271-44
- Sampling and Testing Brick C67-44

#### Standard Method for:

- Quantitative Determination of Coating on Mineral-Coated Paper D678-44
- Designating the Size of Coal from Its Screen Analysis D431-44

#### Standard Method of Test for:

- Basis Weight of Paper and Paper Products D646-44
- Spectral Characteristics and Color of Objects and Materials D307-44
- Internal Tearing Resistance of Paper D689-44
- Moisture in Paper, Paperboard, and Paperboard and Fiberboard Containers D644-44
- Opacity of Paper and Paper Products D589-44
- Pentosans in Paper D688-44

#### Standard Specifications for:

- Built Soap, Powdered D533-44
- Portland Cement C150-44
- Ready-Mixed Concrete C94-44

Procedures for Testing Soils (Nomenclature and Definitions—Standard Methods—Suggested Methods) \$2.25

### National Electrical Manufacturers Association (155 East 44th Street, New York 17, N. Y.)

NEMA Distribution Cutout and Power Fuse Standards \$1.00

### The Tire and Rim Association, Inc., (2001 First-Central Tower, Akron 8, Ohio)

Truck-Bus Handbook, October 1944 Edition \$1.00

## U. S. Government

(Wherever a price is indicated, the publication may be secured from the Superintendent of Documents, Government Printing Office, Washington, D. C. In other cases, copies may be obtained from the government agency concerned.)

### National Bureau of Standards (Washington 25, D. C.)

#### Commercial Standards

Dial Indicators (for Linear Measurements) CS(E)119-45 5¢

List of Commercial Standards Revised to October 1, 1944 LC768

#### Simplified Practice Recommendations

Dental Hypodermic Needles R108-44 5¢

#### Miscellaneous

Antiscatter Treatments for Glass M175 10¢



# ASA Standards Activities

## American Standards

### Standards Available Since Our October Issue

See "ASA Company Member Service—Application for New Standards", page 239.

### Standards Approved Since Our October Issue

Graphical Symbols for Telephone, Telegraph, and Radio Use (Revision of Z32.5-1942) Z32.5-1944

*Sponsors:* American Institute of Electrical Engineers; American Society of Mechanical Engineers

Explosion and Fire Protection in Plants Producing or Handling Magnesium Powder or Dust Z12.15-1944

Prevention of Dust Explosions in Starch Factories (Revision of Z12.2-1942) Z12.12-1944

*Sponsors:* National Fire Protection Association; U. S. Department of Agriculture

Picture Sizes for Roll Film Cameras (Revision of Z38.4.8-1943) Z38.4.8-1944

Back Window Location for Roll Film Cameras Z38.4.9-1944

Threads for Attaching Mounted Lenses to Photographic Equipment Z38.4.11-1944

Attachment Thread Specifications for Lens Accessories Z38.4.12-1944

Distance (Focusing) Scales Marked in Meters Z38.4.13-1944

*Sponsor:* Optical Society of America

### Standards Being Considered by ASA for Approval

Code for Pressure Piping, Proposed Supplement No. 1 (B31.1a)

*Sponsor:* American Society of Mechanical Engineers

Alloy-Steel Castings for Valves, Flanges, and Fittings for Service at Temperatures from 750 to 1100 F, Specifications for (Revision of ASTM A 157-42; ASA G36.1-1942)

Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for Service at Temperatures from 750 to 1100 F, Specifications for (Revision of ASTM A 182-40; ASA G37.1-1942)

Carbon-Steel Plates for Stationary Boilers and Other Pressure Vessels, Specifications for (Revision of ASTM A 70-42; ASA G29.1-1942)

Carbon-Silicon Steel Plates of Ordinary Tensile Ranges for Fusion-Welded Boilers and Other Pressure Vessels, Specifications for (Revision ASTM A 201-43; ASA G31.1-1943)

Chrome-Manganese Silicon (CMS) Alloy-Steel Plates for Boilers and Other Pressure Vessels, Specifications for (Revision of ASTM A 202-39; ASA G32.1-1943)

Low-Carbon Nickel-Steel Plates for Boilers and Other Pressure Vessels, Specifications for (Revision of ASTM A 203-42; ASA G33.1-1942)

Molybdenum-Steel Plates for Boilers and Other Pressure Vessels, Specifications for (Revision of ASTM A 204-42; ASA G34.1-1942)

High Tensile Strength Carbon-Silicon Steel Plates for Boilers and Other Pressure Vessels (Plates  $4\frac{1}{2}$  In. and Under in Thickness), Specifications for (Revision of ASTM A 212-39; ASA G35.1-1942)

*Sponsor:* American Society for Testing Materials

Spring Lock Washers (Carbon Steel) B27.1

*Sponsors:* American Society of Mechanical Engineers; Society of Automotive Engineers

### Standards Submitted to ASA for Reaffirmation

Basic Sulfate White Lead, Specifications for (ASTM D 82-41; ASA K47-1941)

Concrete Building Brick, Specifications for (ASTM C 55-37; ASA A75.1-1942)

Concrete Masonry Units, Methods of Sampling and Testing (ASTM C 140-39; ASA A84.1-1942)

Concrete Masonry Units for Construction of Catch Basins and Manholes, Specifications for (ASTM C 139-39; ASA A73.1-1942)

Hollow Non-Load-Bearing Concrete Masonry Units, Specifications for (ASTM C 129-39; ASA A80.1-1942)

Mild Steel Plates, Specifications for (ASTM A 10-39; ASA G20-1939)

Sand-Lime Building Brick, Specifications for (ASTM C 73-39; ASA A78.1-1942)

Shrinkage in Laundering of Woven Cotton Cloth, Test for (ASTM D 437-36; ASA L10-1936)

Steel for Bridges and Building, Specifications for (ASTM A 7-42; ASA G24-1942)

Structural Clay Floor Tile, Specifications for (ASTM C 57-39; ASA A77.1-1942)

Structural Clay Tile, Methods of Sampling and Testing (ASTM C 112-36; ASA A83.1-1942)

Structural Rivet Steel, Specifications for (ASTM A 141-39; ASA G21-1939)

Structural Silicon Steel, Specifications for (ASTM A 94-39; ASA G41.1-1942)

*Sponsor:* American Society for Testing Materials

## American War Standards

### American War Standards Approved Since Our October Issue

Specification for Test Film for Checking Adjustment of 16-Mm Sound Motion Picture Projection Equipment Z52.2-1944

### War Standards Under Way

Color Code for Lubrication of Machinery Z47

Cylindrical Fits B4.1

Linemen's Rubber Protective Equipment J6

Machine Tool Electrical Standards (Revision of C74-1942)

Photography and Cinematography Z52

Specification for Class II Service Model 16-Mm Sound Motion Picture Projection Equipment Z52.13

Nomenclature for Motion Picture Film Used in Studios and Processing Laboratories Z52.14

Method of Making Intermodulation Tests on Variable Density 16-Mm Sound Motion Picture Prints Z52.15

Specification for Photographic Contact Printer Z52.18

Specification for Photographic Enlarger Z52.23

Specification for Auditorium Type Slide Film Projector Z52.28

Specification for Classroom Type Slide Film Projector Z52.29

Specification for Leaders, Cues and Trailers for 16-Mm Sound Motion Picture Release Prints Processed from Original 16-Mm Material Z52.31

Specification for Warble Test Film Used for Testing 16-Mm Sound Motion Picture Equipment Z52.32

Specification for 16-Mm Motion Picture Film Reels Z52.33

Dimensions for Film-Reel Spindles for 16-Mm Sound Motion Picture Equipment Z52.34

Sound Records and Scanning Area for 35-Mm Sound Motion Picture Prints Z52.36

Method of Determining Signal-to-Noise Ratio of 16-Mm Sound Motion Picture Prints Z52.38

Method of Making Cross-Modulation Tests on Variable Area 16-Mm Sound Motion Picture Prints Z52.39

Method of Determining Printer Loss in 16-Mm Sound Motion Picture Prints Z52.40

Sizes of Photographic Projection Screens Z52.41

Sound Transmission of Perforated Projection Screens Z52.44/333

Whiteness of Photographic Projection Screens (Semi-Diffuse Type) Z52.45/334

Brightness Characteristics of Photographic Projection Screens (Semi-Diffuse Type) Z52.46/335

Protective Occupational (Safety) Clothing L18  
 Women's Safety and Powder Caps L18.13  
 Asbestos Aprons L18.14  
 Asbestos Cape Sleeves and Bibs L18.15  
 Asbestos Leggings L18.16  
 Asbestos Coats L18.17  
 Leather One-Finger Mittens L18.18  
 Leather Mittens L18.19  
 Asbestos One-Finger Mittens L18.20  
 Flame-Resistant Fabric  
 Aprons (Bib Type) L18.21  
 Leggings (Knee and Hip Length) L18.22  
 Coats L18.23  
 Pants L18.24  
 Coveralls L18.25  
 Spats L18.26  
 Leather Spats L18.27  
 Asbestos Spats L18.28  
 Radio Noise, Methods of Measuring C63  
 Resistance Welding Equipment C52  
 Resistance Welding Electrodes and Electrode Holders C52.3  
 Specifications for Design and Construction of Resistance Welding Equipment C52.4  
 Safety Color Code for Marking Physical Hazards Z53  
 Safety Code for the Industrial Use of X-Rays Z54  
 Screw Threads B1  
 Acme Screw Threads B1.5

## News About ASA Projects

### Acme Threads (B1.5)—

The proposed American War Standard for Acme Threads was sent to letter ballot of the general ASA War Committee on Screw Threads, on November 10, to determine whether it shall be submitted to the ASA for final approval. The proposal covers Acme threads for general purposes, as well as for special purposes, such as centralizing Acme threads used in aircraft.

### Color Code for Lubrication of Machinery (Z47)—

The proposed American War Standard, Color Code for Lubrication of Machinery, has been sent to letter ballot of the ASA War Committee to determine whether it shall be submitted to the ASA for final approval. The proposed code is intended to identify lubricant containers and lubricating points so as to assure use of the proper type of lubricant and avoid damage to machinery.

### Coordination of Building Materials and Equipment (A62)—Sponsors: American Institute of Architects; Producers Council.

On November 3, the Executive Committee of the ASA Committee on Coordination of Dimensions of Building Materials and Equipment held its fifth meeting during 1944. The committee authorized the appointment of an editing committee to re-word certain sections in the Proposed American Standard Basis for the Coordination of Building Materials and Equipment, A62.1. The work of this editing committee will be based on comments received during the past year since the draft standard was issued for information and comment. It is expected that recommendations regarding final approval of the proposed standard will be considered by the sectional committee early in 1945.

The committee and the sponsors are now developing lecture material on the work of the committee for use by local groups of architects, engineers, and others interested. It is expected that outlines of lectures, and lantern slides illustrating the principles of the work and the methods being developed by Committee A62, will be available for circulation to interested groups within the next three months.

### Safety Code for the Industrial Use of X-ray (Z54)—

The new ASA War Committee on the Safety Code for the Industrial Use of X-rays held its first meeting November 9. George Singer, National Bureau of Standards, is chairman. The committee decided that as the most effective means of helping in the war effort, it would concentrate its work for the present on the installations already in use, since present installations will probably be called upon to take care of most of the needs of the present war effort. The committee will concentrate its efforts on recommendations that will be valuable in determining which installations now in use are safe and which are hazardous

not only from the viewpoint of the installations themselves, but also from the viewpoint of the operating techniques. It plans to prepare the first part of a standard for publication as soon as possible. This part will concern the permissible dosage or quantity of radiation which is believed to produce no injurious effects; suggested means of measuring the dose; suggestions for the proper inspection and check of these installations and checks on the health of the workers, including physical examinations, blood counts, etc. Handbook HB-20 of the National Bureau of Standards, which covers protection in the medical use of X-ray, is helpful in the work of the committee, although the committee will deal entirely with the use of X-ray in industry. The National Bureau of Standards also has prepared Handbook H-23 on protection in the use of radium as used in radiology. This also will be of help in the work of this committee since it is understood that some radium is now being used in connection with X-ray work in industry.

### Protective Occupational (Safety) Clothing (L18)—

Four proposed American War Standards on asbestos clothing have been sent to letter ballot of the war committee to determine whether they shall be submitted to ASA for final approval. These proposed standards are:

Asbestos Aprons (Bib Type) L18.14  
 Asbestos Cape Sleeves and Bibs L18.15  
 Asbestos Leggings (Knee and Hip Length) L18.16  
 Asbestos Coats L18.17

### Photography and Cinematography (Z52)—

The proposed American War Standard Method of Making Intermodulation Tests on Variable Density 16-mm Sound Motion Picture Prints, Z52.15, and the Proposed American War Standard Method of Making Cross-Modulation Tests on Variable Area 16-mm Sound Motion Picture Prints, Z52.39, have been sent to letter ballot of the ASA War Committee on Photography and Cinematography.

### STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

OF INDUSTRIAL STANDARDIZATION, published monthly at New York, N. Y., for Oct. 1, 1944.

State of New York, County of New York, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Ruth E. Mason, who, having been duly sworn according to law, deposes and says that she is the editor of the INDUSTRIAL STANDARDIZATION and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, American Standards Association, 70 East 45th Street, New York 17, N. Y. Editor, Ruth E. Mason, 70 East 45th Street, New York 17, N. Y. Managing Editor, none. Business Managers, none.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) American Standards Association, 70 East 45th Street, New York 17, N. Y. Henry B. Bryans (Executive Vice-President, Philadelphia Electric Company, Philadelphia, Pa.), President, 70 East 45th Street, New York 17, N. Y. P. G. Agnew, Secretary, 70 East 45th Street, New York 17, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to subscribers during the twelve months preceding the date shown above is..... (This information is required from daily publications only.)

RUTH E. MASON,  
 Editor.

Sworn to and subscribed before me this 21st day of September, 1944.

(Seal)

LYDA I. SJOHOLM.  
 (My commission expires March 30, 1945.)

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